

Translation

PATENT COOPERATION TREATY

PCT/JP2003/009003



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Applicant's or agent's file reference 663936 | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/JP2003/009003 | International filing date (<i>day/month/year</i>) 16 July 2003 (16.07.2003) | Priority date (<i>day/month/year</i>) 29 July 2002 (29.07.2002) |
| International Patent Classification (IPC) or national classification and IPC C07D 487/04 | | |
| Applicant SUMITOMO CHEMICAL TAKEDA AGRO COMPANY, LIMITED | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

| | |
|-----------------------------------------------------------------|-----------------------------------------------------------------|
| Date of submission of the demand 20 August 2003 (20.08.2003) | Date of completion of this report 04 March 2004 (04.03.2004) |
| Name and mailing address of the IPEA/JP | Authorized officer |
| Facsimile No. | Telephone No. |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP2003/009003

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the drawings:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

- These elements were available or furnished to this Authority in the following language _____ which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP03/09003

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|-------|-----|
| Novelty (N) | Claims | 1-12 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | 11-12 | YES |
| | Claims | 1-10 | NO |
| Industrial applicability (IA) | Claims | 1-12 | YES |
| | Claims | | NO |

2. Citations and explanations

Document 1: "Methyl Imidazo[1,2-b]pyridazine-2-carbamates and Related Compounds as Potential Antifilarial Agents," (A.E. Mourad, et al.), J. Heterocyclic Chem., 1992, Vol. 29, pages 1583-1592

Document 2: "Synthesis of Pyridazine Derivatives," (A. Pollak, et al.), Tetrahedron, 1968, Vol. 24, No. 6, pages 2623-2629

Document 3: WO, 00-23450, A1 (Takeda Chemical Industries, Ltd.), 27 April, 2000 (27.04.00)

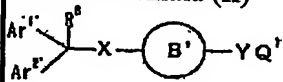
Document 4: "Studies on Anti-MRSA Parenteral Cephalosporins," (T. Ishikawa, et al.), The Journal of Antibiotics, 2001, Vol. 54, No. 3, pages 257-277

Document 1 describes a compound represented by the general formula (II) of the claims of the present application, where X denotes a lower alkyl group (t-butyl group), Y denotes a hydrogen atom, and R denotes a lower alkyl group (methyl group) (Compound No. 35)

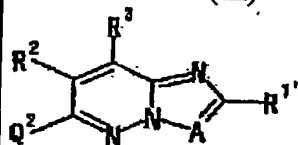
Document 2 describes a compound represented by the general formula (II) of the claims of the present application, where X denotes a lower alkyl group (methyl group), Y denotes a hydrogen atom, and R denotes a lower alkyl group (methyl group) (Table 1, 2,6-dimethylimidazo(1,2-b)pyridazine).

Document 3 describes the production of a compound of the following formula (I') from a compound of the following formula (II) (where Q1 denotes an alkali metal or hydrogen atom, and Y denotes an alkylene, etc. or "bond") and from a compound of the following formula (III) (where Q2 denotes a halogen atom), characterized in that the reaction is performed in the presence of a base and an additive (magnesium sulfate, zinc chloride, cuprous chloride, potassium fluoride or lithium chloride).

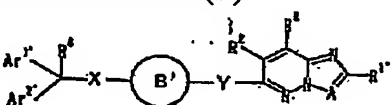
General formula (II)



General formula (III)



General formula (I')

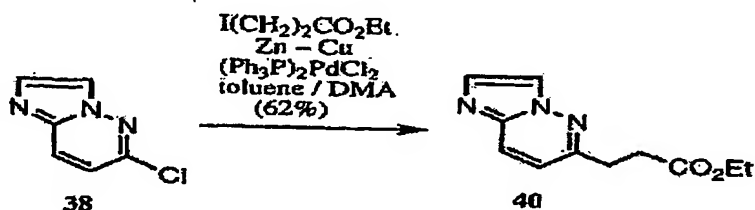


Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of : V.2

Document 4 describes a process for producing the following compound No. 40 from the following compound No. 38.



Claims 1-10

The subject matters of claims 1-10 do not appear to involve an inventive step in view of documents 1-4 cited in the ISR.

The compounds represented by the general formula (II) of claim 1 are not novel as they are described in documents 1 and 2. A person skilled in the art could have easily examined the method described in document 3 for introducing the alkyl group at the 6-position when any of the compounds is synthesized, and could have easily used any of the "transition metal catalysts" as disclosed in documents 3 and 4.

Claims 11 and 12

The subject matters of claims 11 and 12 appear to be novel and to involve an inventive step in view of documents 1-4 cited in the ISR.

The compounds represented by the general formula (III) of claims 11 and 12 are considered to be novel, and documents 1-4 neither describe nor suggest any method for producing the compounds.